

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 61-80 are presented for consideration. Claims 61 and 71 are independent. Claims 37-49 have been canceled without prejudice or disclaimer. Claims 61, 67 and 71 have been amended to clarify features of the subject invention, while claims 72-80 have been added to recite additional features of the subject invention. Support for these changes and claims can be found in the original application, as filed. Therefore, no new matter has been added.

Applicant requests reconsideration and withdrawal of the rejection set forth in the above-noted Office Action.

Claims 37-49 and 61-71 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 4,814,829 to Kosugi et al. in view of the Cognex Corporation User's Manual (Cognex 4000/5000 SMD Placement Guidance Package; Fiducial finder 5). Applicant submits that the cited art, whether taken individually or in combination, does not teach many features of the present invention. Therefore, this rejection is respectfully traversed. Nevertheless, Applicant submits that independent claims 61 and 71, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 61 recites a position detection apparatus for detecting a position of a mark on an object. The apparatus includes a camera which captures an image of the mark, an extraction section which extracts an edge position of the mark based on the image of the mark, a determination section which determines a position of the mark

by comparing the edge position with a template, and a control section which changes at least one of a parameter used by the extraction section and a parameter used by the determination section, based on a result of the comparing by the determination section.

In another aspect of the present invention, independent claim 71 recites a position detection method of detecting a position of a mark on an object. The method includes steps of capturing an image of the mark using a camera, extracting an edge position of the mark based on the image of the mark, determining a position of the mark by comparing the edge position with a template, and changing at least one of a parameter used by the extraction step and a parameter used in the determination step, based on a result of the comparing in the determining step.

Applicant submits that the cited art does not teach or suggest such features of the present invention as recited in independent claims 61 and 71.

The Examiner takes the position that the Kosugi et al. patent discloses a position detection apparatus for detecting a position of a mark on an object, which includes a control section that changes a parameter used by at least one of an extraction section and a determination section, based on a result of a comparison made by a determination section (column 11, lines 5-14, and column 27, lines 18-26). Applicant submits, however, that the arrangement in the Kosugi et al. patent is completely different with respect to the present invention, at least with respect to the control section. The Kosugi et al. patent at column 1, lines 18-31, merely discusses that the resolving power of a projection lens can be estimated based on a numerical aperture of the projection lens and the wavelength of light to be used, and, in the X-ray exposure system, the limited number of parameters are determined by the size of the X-ray source. At column 1, lines

50-56, the Kosugi et al. patent merely discloses that the super-imposing accuracy is important in the exposure apparatus. Further, at column 11, lines 5-14, the Kosugi et al. patent discusses that, prior to the detection of the image of the second member, the signal generated by detecting the image of the standard member is compared with the reference value stored in advance, and the quantity of light from the illumination optical system is adjusted. Applicant submits, however, that it is clear that the quantity of light is different from a parameter of the present invention recited in independent claims 61 and 71.

Still further, the Kosugi et al. patent at column 27, lines 18-26, merely discusses an arrangement for detecting signals at the same time.

For these reasons, Applicant submits that the Kosugi et al. patent does not teach or suggest the salient features of Applicant's present invention as recited in independent claims 61 and 71, including, at least, the change of parameters.

Applicant further submits that the remaining art cited does not cure the deficiencies noted above with respect to the Kosugi et al. patent.

On this point, Applicant submits that the cited Cognex Corporation User's Manual fails to teach or suggest changing at least one of a parameter used in edge position extraction and a parameter used in the determination of a position of a mark based on a result of comparing an edge position of a mark with a template in the manner of the present invention. Accordingly, the cited manual adds nothing to the teachings of the Kosugi et al. patent that would render obvious Applicant's present invention recited in independent claims 61 and 71.

In addition, Applicant submits that there is no incentive or motivation to modify the arrangement in the Kosugi et al. patent based on the teachings of the cited manual, such that at least one of a parameter used in edge position extraction and a parameter used in determination of a position of a mark is changed based on a result of comparing an edge position of a mark with a template, in the manner of the present invention recited in independent claims 61 and 71.

For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 61 and 71, is patentably defined over the cited art.

Dependent claims 62-70 and 72-80 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant further submits that this Amendment After Final Rejection clearly places this application in condition for allowance. This Amendment was not earlier presented because Applicant believed that the prior Amendment placed the application in condition for allowance. Accordingly, entry of the instant Amendment, as an earnest attempt to advance prosecution and reduce the number of issues, is requested under 37 CFR 1.116.

Favorable reconsideration, withdrawal of the rejection set forth in the above-noted Office Action and an early Notice of Allowance are also requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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